The CHEMIST

JANUARY, 1942 VOLUME XIX, No. 1

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CHEMIST ADVISORY COUNCIL

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CAREER OF PRESIDENT FISHER

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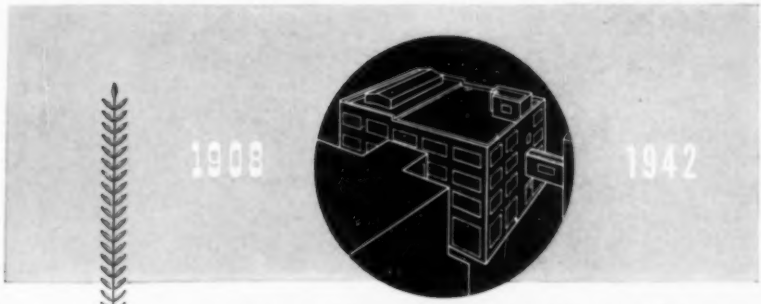

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The CHEMIST

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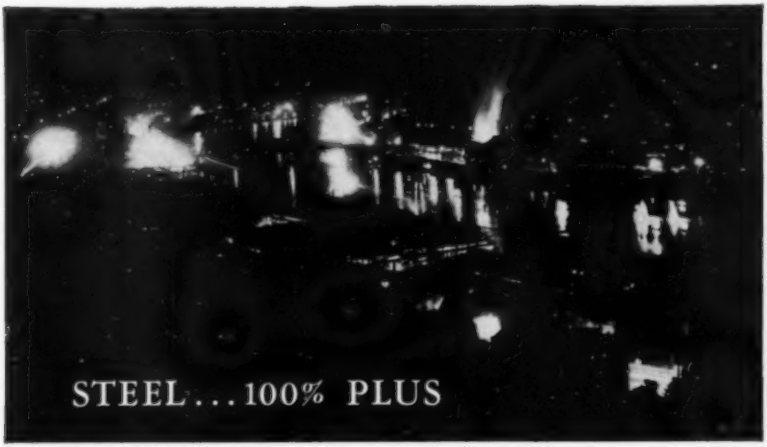

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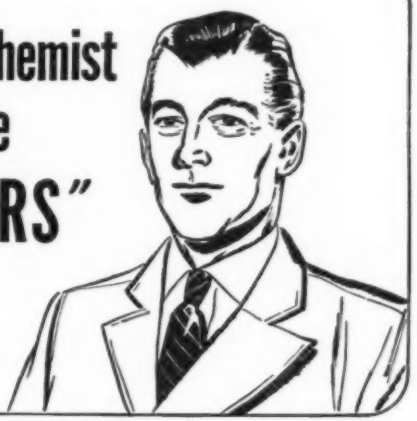

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Chemist Advisory Council

A report of the four years of activities of Chemist Advisory Council appears in this issue of THE CHEMIST. It shows some unusual features relative to human problems among members of the profession, and how they have been solved by mutual coöperation and by the instillation of the principles of self-help, self-reliance, and by the development of a central bureau of information.

The Committee on Unemployment and Relief for Chemists and Chemical Engineers, which immediately preceded Chemist Advisory Council, was born during the depression out of the need for some central bureau to take care of the immediate problem of chemists in economic distress. Generous contributions to the Committee made this welfare work possible, and a large number of qualified chemists and chemical engineers received timely assistance, and were re-oriented into the profession. With the gradual decrease in demands for immediate relief, more serious professional problems were evident. These dealt with the economic stability of the chemist, the supply and demand of graduates and post-graduates, the unemployed older men, and the adaptation of experienced chemists to related fields. A central permanent organization seemed to be required to assist in the solution of such factors affecting chemists. Therefore, Chemist Advisory Council was incorporated as a national permanent organization, with M. R. Bhagwat, F.A.I.C., well-known for his understanding of professional problems, continued as its secretary and general manager.

The normal relationship of chemists to industry has been temporarily altered by the present war conditions, and this situation caused the Board of Directors of Chemist Advisory Council to decide that its activities in New York should be temporarily suspended, but that the organization should be kept in readiness for resumption of these activities whenever the chemical profession feels that its services are required. Therefore, the legal existence of the Council is being continued, and the local coöperating committees will continue their efforts

to render such assistance as may be required in their respective localities. Dr. W. T. Read, F.A.I.C., will act as coördinator for these committees.

The need for Chemist Advisory Council will undoubtedly be great when the War is over and chemical industries readjust themselves to peacetime requirements, though indications are that, before that time, the chemical profession may realize that Chemist Advisory Council can help more during the readjustment period, if it resumes activities within the next year or so in preparation for that period.

Annual Meeting

The annual meeting of THE AMERICAN INSTITUTE OF CHEMISTS will be held, Saturday, May 16, 1942, at the Claridge Hotel, Atlantic City, New Jersey. Details will appear in a later issue of THE CHEMIST.

Correction

The letter from the National Defense Research Committee, page 450, of the December, 1941, issue of THE CHEMIST, suffered an omission of the following words, "upon which no work has been done and sometimes problems". The second paragraph of this letter should read as follows:

"You are probably acquainted with the fact that the National Defense Research Committee is limited in scope to a study of strictly military problems of the Army and Navy. For the most part, these problems have been submitted to us by the military forces and involve sometimes entirely new problems *upon which no work has been done and sometimes problems* which have been previously studied but not yet brought to completion. Just at present there is no organization in the government which is studying substitute processes, substitutes, surpluses, etc. I hope and expect that very shortly an organization for this purpose will be created and that funds for research will be provided. This would greatly expand the investigations which should be undertaken and I am sure that many of your members will be called upon to help."

Chemist Advisory Council, Inc.

Secretary's Report for the Year, 1941

Presented at the Fourth Annual Meeting of the Members of Chemist Advisory Council, Inc., January 16, 1942.

Members of the Council

E. R. Allen
R. L. Baldwin
R. T. Baldwin
F. M. Becket
M. R. Bhagwat
H. B. Bishop
M. T. Bogert
F. G. Breyer
William Callan
B. L. Cottle
Hugh Craig
G. J. Esselen
William L. Evans
Harry L. Fisher
R. R. Foran
C. N. Frey
W. H. Gardner
W. N. Jones
S. D. Kirkpatrick
H. G. Knight
C. A. Kraus
Walter S. Landis
J. A. Lee
Robert J. Moore
A. C. Morrison
W. J. Murphy
Howard S. Neiman
H. F. Payne
W. T. Read
Walter Schmidt
Maximilian Toch
S. L. Tyler
H. C. Urey
H. F. Wakefield
A. H. Warth
E. R. Weidlein
Louis Weisberg
F. W. Zons

Chemist Advisory Council, Inc. has completed four years of its welfare services on behalf of chemists and chemical engineers. This is also an occasion to commemorate the Tenth Anniversary of the founding of the Committee on Unemployment and Relief for Chemists and Chemical Engineers, of which the Council is the successor. All of us who were or are associated with this worthy project should feel a deep satisfaction to note that this is the first group effort of its character in

the history of the chemical profession. It is natural, therefore, that such a new project should meet with all sorts of obstacles. In spite of these difficulties, the emergency Unemployment Committee and the present Council have accomplished a great deal and the experience gained during these ten years has proven to be very beneficial to the profession at large.

The program has definitely passed the test tube and pilot plant stages. Its operation on a nation-wide basis will no doubt depend upon how readily the chemical profession recognizes its value. The future of this organization, therefore, definitely depends upon the action of the members of the Council and of their ability to convince individual chemists and chemical engineers, and chemical companies, of its benefits in elevating the standard of the profession.

The work accomplished thus far has been made possible by the efforts of a few men. Although the Unemployment Committee and the present Council were sponsored by chemical societies and associations, most of the efforts required to finance and manage the affairs of these two organizations fell upon the shoulders of a half-dozen men. The success of the Unemployment Committee was principally due to the activities of its finance committee. The appeal for funds by this committee was rewarded by a total contribution of $58,336.34. These contributions came from 1071 individuals, 37 companies, and 24 laboratory groups representing 224 persons.

The success of this effort led to the thought of the establishment of a permanent organization. Hence, your Secretary who was also manager of the Unemployment Committee, interviewed more than 200 men representing the various branches of the chemical profession to obtain their views regarding the value of the organization. All felt the necessity of a permanent welfare organization devoted to individual problems of chemists and chemical engineers. Some suggested the establishment of a central clearing house on professional problems. Discussions resulting from these interviews led to the incorporation of Chemist Advisory Council which was set up as an individual national organization in 1938.

The Council is sponsored by the American Institute of Chemical Engineers, THE AMERICAN INSTITUTE OF CHEMISTS, the American Electrochemical Society, the Association of Consulting Chemists and Chemical Engineers. It has 62 local coöperating committees in all parts of the country. Several industrial sections, such as the North

Jersey Section and the Western Connecticut Section of the American Chemical Soicety have standing committees to assist the Council. The Washington Chapter of the American Chemical Society has also an active Committee. This illustrates the growth of the organization during the past four years. However, due to lack of adequate publicity and finances, a large number of chemists and chemical engineers are still unacquainted with this welfare effort on their behalf. In spite of this limited publicity, the registration of unemployed chemists and chemical engineers continually increases. The following table shows the registration figures:

Registration

Total registration since the inception of the Council in 1938 to Jan. 1 1942 — 2133.

Group No. 1 (Total 1025)

Qualifications:

B.S. degree with two or more years' industrial experience, or
M.A. degree with more than one year's industrial experience, or
Ph. D. degree with or without experience.

Residence:

499 or 49% resided in the greater New York metropolitan area.
526 or 51% resided outside New York.
44 states are represented.

Education:

Graduates and post-graduates of 163 colleges and universities.
495 or 48.3% have B.S., Ch.E. degrees.
185 or 18.2% have Master's degrees.
272 or 26.5% have Doctor's degrees.
73 or 7.0% have foreign degrees.

Age:

447 or 43.7% are below 30 years of age.
377 or 36.7% are between 30—40 years of age.
147 or 14.4% are between 41—50 years of age.
54 or 5.2% are above 50 years of age.

Experience:

442 or 43.2% have less than 5 years' industrial experience.
251 or 24.5% have between 5—10 years' industrial experience.
211 or 20.6% have between 11—20 years' industrial experience.
121 or 11.7% have above 20 years' industrial experience.

There are 75 women in this group, or about 7%.

Group No. 2 (Total 1059)

Qualifications:

B.S. degree but less than two years' industrial experience, or M.A. degree but less than one year's industrial experience.

Residence:

709 or 67% resided in greater New York metropolitan area.
350 or 33% resided outside New York.
42 states are represented.

Education:

Graduates and post-graduates of 189 colleges and universities.
912 or 86% have B.S., Ch.E. degrees.
147 or 14% have Master's degrees. (Includes 3 with foreign degrees.)

Age:

858 or 81.0% are below 25 years of age.
193 or 18.2% are between 25—30 years of age.
8 or 0.8% are above 30 years of age.

Experience:

767 or 72% have had no industrial experience.
292 or 28% have less than two years' experience.

There are 142 women in this group, or about 13%.

Group No. 3 (Total 49)

Qualifications:

Non-graduates having more than five years' industrial experience.

These men have attended one or more institutions of higher education but do not possess chemical degrees.

(This being a small group, the percentage classification did not appear to be very significant.)

The above classification was entirely based upon information given by the registrants in their records and their statements were not verified. It is important to note that the above number of registrants does not include unsuitably employed, marginally qualified, immigrants, students, and all other miscellaneous groups who called upon the Council for assistance. Although the registration of qualified persons decreased

during 1941, the number of visits from men and women desiring to change their present positions and those wishing to enter government and other services made available due to the national defense program has considerably increased. More than 2,000 have used the services of the Council during the year.

Referring to the records received during 1941 of registrants having more than ten years' experience, one finds persons with the following specialities: Paints, varnish and inks; Rayon, viscose, textile fabrics; Soaps, pharmaceuticals, perfumes; Bio-chemical research—applied or with research foundations; High vacuum technique; Teaching—various branches of chemistry or chemical engineering; Asphalt, asphalt products; Patents and trade-marks; Metals; Plastics, protective coatings; Refining of vegetable oils; Leather products; Explosives; Foods; Soil chemistry; Tar products; Industrial alcohol; Petroleum; Catalysis; Ozone Products; Paper and pulp; Rare earths; Consulting. Positions held were: Chemical engineer; Plant superintendent; Designing equipment; Management; Supervisory; Chief Chemist; Technical Director; Dean, etc.

Registrants were assisted by the Chemist Advisory Council in several ways. Many of them required guidance in the preparation of experience records to show their background to best advantage and to enable employers to evaluate their work. Experience records were analyzed to determine the field in which the chemist would be most useful. For example, a chemist's record may have shown that he was best fitted for a position which utilized the knowledge gained in two or more kinds of work in which he had been employed. Registrants had to be shown how to look at employment possibilities from the employer's point of view in order to decide what they had of value to offer to a specific employer.

Trends in employment had to be determined and chemists taught to analyze the possibilities of work in their field, and how to broaden their vision of opportunities in other fields in which their experience could be utilized. Some applicants had to be shown how to prepare letters which presented their abilities favorably. Occasionally a slight change in attitude or the actual method of conducting an interview was all that stood between a registrant and a position.

Where courage and confidence were lacking, these had to be instilled. Sometimes excellent chemists proved to be highly sensitive introverts

who developed a sense of inferiority and doubt of their own ability when they found themselves out of employment. In such cases their morale had to be kept up, particularly where the experience was of so unusual a nature that an opening for its use was not quickly found.

The Council offered a place where chemists could come to discuss their problems in confidence, where they would get a clear analysis of their situation from a rational and impersonal point of view without bias of any kind. The Council has given a considerable amount of time to assistance of this nature. A number of applicants have found that analysis of their possibilities and information about how to present these effectively are all that was needed to enable them to accomplish their objectives.

Finances—1941

Since the Third Annual Meeting of the Chemist Advisory Council, held on January 30, 1941, the Board of Directors held four meetings, one of which was for the election of officers to serve during 1941. At their meeting on February 14th, they adopted a resolution to suspend the activities of the Council because of lack of interest in the work of the Council among the leaders in the chemical industry, and also due to the decrease in unemployment. However, this precipitous move on their part was rescinded at their next meeting held on February 26th. At this meeting, it was decided that a committee should request one of the industrial associations to underwrite the expenditures of the Council to the extent of about $6,000 per year for a period of two to three years. If this had been accomplished, the Council would have had funds to plan ahead with the hope of educating the chemical public regarding the services of the Council, and also to secure the needed publicity for this purpose. However, the Council was unable to secure the required coöperation, which increased the difficulty of keeping the organization adequately financed. During the early part of the summer, therefore, the Council went through a serious emergency period. Thanks to the generosity of THE AMERICAN INSTITUTE OF CHEMISTS and of three members of Chemist Advisory Council for their timely contributions, the Council was able to keep going. During this crisis, your Secretary called on a number of former contributors and forwarded about seventy-five letters, under the signature of the Chairman of the Finance Committee, to past and prospective contributors. A total of

about $2,000 was raised from this effort. Hence, with the assistance of the coöperating committees of the North Jersey and Western Connecticut Sections, and group contributors, the Council secured assistance from 854 subscribers, 560 of whom were new contributors during 1941. It is true that the amounts contributed were small, but our program to secure contributions of $1.00 a year from individual chemists was increasingly successful, as indicated in the comparative classification given below.

A Comparative Classification of Receipts and Expenditures, Etc.

(164)	Contributions,	1938	$4,062.00	
(463)	"	1939	6,133.02	
(443)	"	1940	2,775.00	
(854)	"	1941	4,945.00	$17,915.02
	*Misc. Receipts,	1938	963.22	
		1939	35.00	
		1941	110.00	1,108.22
TOTAL RECEIPTS, March 2, 1938 to December 31, 1941				$19,023.24
	Expenditures,	1938	$3,660.63	
	"	1939	4,756.72	
	"	1940	5,095.18	
	"	1941	5,331.62	18,844.15
				$ 179.09
	Balance, January	1, 1939	$1,364.59	
	" "	1, 1940	2,775.89	
	" "	1, 1941	445.71	
	" "	1, 1942	179.09	

*Includes balance of funds received from the Chemists' Unemployment Committee, refunds from unemployed chemists on loans advanced by the Unemployment Committee, and $100 in loans from two members of the Board of Directors during 1941.

A comparative classification of contributions received:—

Companies:			
1938	(10)	$ 630.00	
1939	10	1,095.00	
1940	11	597.00	
1941	21	1,655.00	$ 3,977.00
Institutes, Societies & Associations:			
1938	4	565.00	
1939	1	150.00	
1940	1	200.00	
1941	2	700.00	$ 1,615.00
Laboratory Groups:			
1938 1 repres.	23	$ 143.00	
1939 10 "	321	981.52	
1940 14 "	373	722.00	
1941 21 "	532	854.75	$ 2,701.27
Individuals:			
1938	127	$2,724.00	
1939	131	3,906.50	
1940	58	1,256.00	
1941	209	1,735.25	$ 9,621.75
		GRAND TOTAL:	$17,915.02

TOTAL NUMBER OF INDIVIDUAL CONTRIBUTORS, 1938 to 1942 — 1,354.

Other Forms of Assistance Received

As in the past, the Council continued to receive, with deep appreciation, the following technical and other periodicals with the compliments of the respective publishers: Chemical Industries; Chemical & Metallurgical Engineering; Oil, Paint and Drug Reporter; News Edition of the American Chemical Society; The Chemist; The Indicator; Michigan Architect and Engineer; Textile Chemist and Colorist; The Merck Report; The Merck Index; The Chemist Analyst; Witcombings; The Laboratory; and The New Yorker.

The Council also appreciates the coöperation of the various federal

bureaus, particularly the United States Civil Service Commission, and the Office of Production Management for placing the Council's name on their mailing list thereby giving information regarding opportunities for chemical men in government service.

The New York Herald Tribune continued to forward information regarding positions available which was published in Sunday editions.

The Council also appreciates the consideration given by the Management of the Lincoln Building Corporation for cancelling the lease and permitting the Council to occupy its present offices on a month to month basis.

The Council is also thankful to the American Cyanamid Co. and the Carbide and Carbon Chemical Corporation for permitting the Council to continue to use their office equipment.

The President, the Treasurer, and other members of the Board donated all clerical services required incidental to their respective offices.

Scope of the Council's Activities

Supplementary to the assistance given to individual chemists and chemical engineers, and others mentioned above, the Council has increased its scope of activities as follows:

1. Representatives of chemical companies in search of suitable candidates to fill vacancies available in their organizations called on the Council and secured the names and addresses of registrants, many of whom benefited through these contacts. Employers also used the Council's services to solve the personnel problems which confronted them when new opportunities occurred in potential projects.

2. Personnel managers of colleges and universities called on the Council and secured information for their graduates and post graduates regarding opportunities in the profession. The Council also assisted them in adjusting the status of a number of their alumni who were unsuitably employed.

3. Your Secretary attended all chemical meetings held in the greater metropolitan area and brought the work of the Council to the attention of the members of these societies. The American Institute of Chemists invited your secretary to attend their national council meetings during which problems confronting individuals in the profession were discussed. The national council also showed considerable interest in placing the work of the Chemist Advisory Council on a sound financial basis.

4. Local coöperating chairmen are engaged in forming their committees and are awaiting further instructions from the Council as to the best way they can be of service to the central organization. These committees must be given adequate information regarding the work accomplished by the Council and probable plans which might be undertaken so that the Council's services will be available to everyone in the profession wherever he may reside in the United States.

5. Calls from representatives of State Employment Services and Federal Bureaus increased during the year.

6. During 1941, the Council did not receive any call from chemists who were in such dire need that they required financial assistance.

Conclusion and Recommendations

The above information regarding the Council's work touches upon most of the important phases of the daily routine at the Council's office. The Council was called upon to render useful services to every branch of our profession. No doubt, the major portion of the work related to the problems of individuals, particularly employees and employers in the chemical profession. If sufficient funds had been available, this work would have progressed to such an extent that all in the profession would have been impressed with the services rendered by this organization. Needless to indicate that the General Manager could not plan ahead and was compelled to do whatever he could on a day to day basis. The Council at present enjoys an excellent record in the profession. It has performed a great deal of good, hence this work must be continued. During the present emergency, the Council should plan a program whereby it can render vital service to men and women and the industry now and soon after the end of the war. Your Secretary, who has also been General Manager of the office, is convinced that unless the profession does something about it now, individual chemists and chemical engineers may face professional hardships, and, in turn, the societies, associations and the profession at large may suffer.

In conclusion, the following recommendations deserve your serious consideration:

1. The members of the Council are earnestly requested to investigate thoroughly the accomplishments of the Council, up to now, and decide how it can best serve the profession during the emergency and soon after the termination of the war.

2. Select a large number of younger chemists and chemical engineers who know something about the profession and who are vitally interested in preserving its independence to the membership of this organization, thereby creating an active group of people who will convince other chemists and chemical engineers of the usefulness of this welfare organization.

3. While this plan is underway, conferences should be held with leaders in the industry requesting their support. Immediate funds should be secured by underwriting the expenses of the organization so that the Council's treasury will have sufficient money to cover the bare running expenses for at least two years. In other words, we must raise between $10,000 and $15,000 immediately and plan to raise that sum each year thereafter.

4. The success of the Council's program will necessarily depend upon how quickly we can secure the needed publicity and upon how many men will be willing to spend their time and energy in reaching past contributors and others who have not yet contributed although they appeared to be quite sympathetic to this project.

5. The chemical and professional societies could do a great deal to keep this organization intact. The first move on their part should be to inform all their members regarding the services of the Council, what it can do for them now and in the future, and how little it spent in accomplishing its present objectives. Knowing chemists and chemical engineers, your Secretary is convinced that if all in the profession are informed about this project, its financial support can be ensured by individual contributions. If chemists and the chemical industry recognize the benefits from this organization, they will in turn reciprocate.

6. Finally, the success of the organization depends upon its operation on a sound, financial basis and with a constructive program which will be beneficial to all in the profession.

During the past ten years your secretary has devoted his entire time and energy to the promotion of professional feeling among chemists and chemical engineers in an effort to convince them of the usefulness of this project and its benefit to the profession. Its efficient operation on a permanent basis will depend upon the active support of the members of the Council.

Respectfully submitted,

M. R. Bhagwat, Secretary

The Candid Camera Records the Fourth Annual Meeting of Chemist Advisory Council on January 16, 1942

Pictures by Courtesy of Mr. W. J. Murphy

Howard S. Neiman
Marston T. Bogert

A. Cressy Morrison
W. T. Read

Gustavus J. Esselen
R. T. Baldwin

At Head Table: Marston T. Bogert, A. Cressy Morrison, W. T. Read, M. R. Bhagwat and E. R. Allen

Hugh Craig

H. F. Payne
Jean Miller

W. H. Gardner
B. L. Cottle

A. H. Warth
H. L. Fisher

Robert J. Moore

Career and Accomplishments of President Fisher

As revealed at a testimonial dinner given to Dr. Fisher at The Chemists' Club by The New York Chapter of The American Institute of Chemists.

Harry Linn Fisher

***By* Marston Taylor Bogert, F.A.I.C.**

HARRY LINN FISHER was born January 19, 1885, in Kingston, N. Y.; son of George Edwin Fisher and Emma Adelia (Bray) Fisher. His father was a locomotive engineer on the West Shore R.R., now part of the New York Central System. He worked on construction and ran the first passenger train from Kingston, N. Y., to Weehawken, N. J., in 1883. Harry's early life was closely associated with the railroad, engines, mail cars, and railroad men. He was the second of five boys (no girls). He was skinny and timid; his name should have been Harry Milquetoast (with apologies to Webster). Families used to think that there should be at least one skinny kid in the family, and Harry was "it." His timidity made him seek his father's hand whenever he crossed a street with him.

His early education was obtained first in the Town of Union, N. J., High School (now the Union City High School); and then in the Dwight School, New York City. In the Fall of 1905, he entered Williams College. He took all the entrance examinations "at once" just before college opened, and won the Horace F. Clarke Scholarship Prize of $200., which was awarded at the end of freshman year. He also won the same prize in his senior year, receiving a similar amount then and half that amount after his first year of graduate work.

During the freshman year, his mates noticed that he spent much time each morning at the wash basin, and on his birthday they all came

marching into his room, each bearing a cake of soap. His laundry case had arrived from home that morning and there was plenty of cake and cookies, etc. to help feed them all. That same night they did their best to "smoke him out," but as usual it did not work.

During his sophomore and junior years he was private secretary to Dean Ferry (later president of Hamilton College), often took dictation from President Hopkins, and during senior year from President Garfield. He also did much work of a routine nature in the Dean's office. Also in sophomore year he was a member of the college track team, running the mile. His light weight gave him little reserve, and he never was able to win a race. From track work he was known as "Lightfoot" and from his work in the Dean's office he frequently was called "Dean." During his last two years in college he was an usher in the Chapel.

Following his graduation from Williams with the A.B. degree in 1909, he began advanced work at Columbia, as a University Scholar in Chemistry, and received the A.M. degree in June, 1910. He was assistant in organic chemistry for the Summer Session of 1910, and for the rest of the academic year of 1910-11, during all of which time he continued his graduate work, and followed this by working through June and the Summer Session of 1911 in the Organic Laboratory. Evidently he has some Scotch blood in his veins, because when he was in his first year as a graduate student at Columbia his standard lunch in the old cafeteria in the top of University Hall was a bowl of milk, 10¢, and some oatmeal crackers, 5¢. Later, by accident, he found out that the amount of milk in a bowl was the same as that in a glass, and the glass of milk cost only 5¢. Whereupon he switched to a glass of milk and oatmeal crackers.

He was instructor in chemistry at the Cornell University Medical College for 1911-12, and received his Ph.D. degree from Columbia University June 1912, the title of his Dissertation being "The Preparation and Properties of 5-Amino-6-quinoline carboxylic Acid and some Compounds Derived Therefrom." His first publication was a joint paper with Dr. Nellis B. Foster on "Creatine and Creatinine Metabolism in Dogs with Eck Fistula," which appeared in the *Journal of Biological Chemistry*, **9**, 359-362 (1911).

From 1912 to 1919, he was instructor in organic chemistry at Columbia University. A direct product of this experience was his *Labora-*

tory Manual of Organic Chemistry, which appeared in 1920, and is now in its fourth revised edition.

In 1919, he left the academic ranks and entered the industrial army as Research Chemist for the B. F. Goodrich Company. But he had a good deal of difficulty in becoming a good "industrial" chemist. While he was at Goodrich, one late afternoon after five o'clock, when several of the chemists were escorting a visiting friend through the plant, the watchman accosted them. Harry told him that everything was all right, since the visitor "was a guest of the university!"

His scientific achievements and the many honors he has received in recognition thereof, will be reviewed for you by Dr. Norman A. Shepard, of the American Cyanamid Company, who has been his close friend ever since their early association in the rubber industry at Akron.

In honor societies he has also been active, having been Secretary (1913-16) and President of Phi Lambda Upsilon in 1916-18, a member of Phi Beta Kappa, and of Sigma Xi. He is also a member of The Chemists' Club.

Referring to Phi Lambda Upsilon, his classmate, George Beal, says that Harry became one of its national officers at a very important time. The number of chapters had just increased to the point where it really constituted a modest national fraternity, and some one with a sense of order and a genius for organization was greatly needed. It was Harry who first put the office of National Secretary upon a really efficient basis, and the fraternity owes no small part of its growth and development to his energetic and intelligent activities in its service.

When he came to Columbia, he was particularly proud of the organic compounds that he made at Williams, under the direction of Professor Leverett Mears, and they were indeed, like all of his preparations, a collection of museum specimens. One that was particularly noteworthy was a tube of colorless ethyl iodide containing a globule of Hg as preservative.

However, he had his embarrassing moments also. One of his classmates recalls the following episode. On Harry's first day in our Organic Laboratories, some of the Columbia graduate students proceeded to cross-examine him, to see how much chemistry he really knew. Harry told them that he had majored in chemistry at Williams and had written a thesis on the synthesis of indigo for his A.B. degree, and that in carrying out with it one of the reactions described in the literature, he

had obtained finally a beautiful white crystalline compound. The identification of this product, he admitted, had not only stumped him, but his chemistry teacher as well. It melted undecomposed at high temperature, but attempted analyses for C, H or N, gave negative results. At the suggestion of his classmates, he brought some of the substance to the laboratory the following day, although he was more than skeptical of the ability of these graduate students to aid him in the solution of the problem. Upon examination, this material looked like common salt, tasted like salt, gave the sodium flame, and a silver chloride precipitate—in fact was salt. What had happened in the course of Harry's fusion of phenyglycine with caustic soda was a complete breakdown of his organic compound, so that what separated on subsequent treatment with HCl and concentration was sodium chloride, and not the expected indigo. The net result of this experience perhaps gave him additional confidence in the kind of chemistry taught at Columbia.

In those days, as noted above, he was the lightest man in his class. One of his classmates was Carl G. Amend, now a member of the board of directors of the well-known firm of Eimer and Amend, who was a wiry athlete and an expert fencer. One afternoon at the close of a hard day's work, as a mental relaxation and physical stimulus, Carl playfully grabbed Harry, lifted him up over his head, pushed him over some pipes hung from the ceiling and took him down on the other side. As he explained to his human dust-rag at the time, he felt that the accumulation of dust on these pipes and its falling down upon his desk was likely to interfere with the accuracy of his work, and that something therefore had to be done about it. I don't believe that Carl could do this today, even if Harry would consent to a repetition of the experiment.

One time while an instructor, he built an apparatus for use with Dumas nitrogen analysis that went wrong when he turned the wrong stop-cocks, built up some pressure which lifted a flask which was fastened upside down and sprayed him with fifty per cent sulfuric acid. Later, I having witnessed the accident, I introduced him at a dinner with the statement that he could build an apparatus which was guaranteed to take the pants off anyone.

One of Harry's outstanding characteristics is the neatness and accuracy of his work—the "copper-plate" appearance of his lecture and laboratory notes. In that respect he resembles the great Michael Faraday, whose notebooks, preserved in the archives of the Royal Institution, London, are models of orderliness and meticulous care in presentation. It is not surprising, therefore, that as an instructor he always

insisted upon similar neatness and thoroughness on the part of his students.

During World War I, when I was in the U. S. Army, Dr. Fisher gave the lectures in advanced organic chemistry and, although this was the first time he had given the course, went into the subject in his usual way, taking up and emphasizing so many details which he regarded as important that some of his students thought he was a little unreasonable and was riding them too hard, when it concerned proofs of structure.

He has always been the sort of man who could be safely entrusted with responsibilities. When you turned anything over to him, you could be confident not only that the job would be done, but also that it would be done probably much better than you could do it yourself. He was always a hard persistent worker, who stuck tenaciously to his university assignments, determined to make the most of his opportunities, with the result that his grades were almost invariably "A's."

How successful he was in interesting his students in organic chemistry can be gaged by the following occurrence, when he was a resident of Weehawken, N. J. On one of these daily commuting trips, he was considerably delayed by a bad fog on the river. When he reached the lecture room, about a half hour behind schedule, he expected to find it empty. Instead, to his surprise and gratification, he found every student in his place.

A number of years ago he had an extra good assistant—a Williams man with a doctor's degree. He was a wonderful man, with a mighty fine family and educational background, but loved to smoke, drink, and go around with the ladies. After he and Dr. Fisher had been associated for several months, he one day said to Harry in the course of an interesting conversation, "I think you get more out of life than any other man I know."

Another kind thought was expressed in a document which came to light after the flood in his cellar, following the hurricane in 1938. It is signed by twelve students. These men had spent a seminar hour each week at Columbia, doing special work on industrial organic chemistry, during one semester, without any official credit at all. Dr. Fisher simply guided them in their working out of their problems.

In this same housecleaning after the flood there also came to light his second official appointment at Columbia.

Any change in Harry's grade, fortune, or importance never has had and never will have any effect upon his attitude toward others. He will

always be the same congenial companion and considerate friend, without affectation, condescension, or snobbishness. To him, elevation to a higher position means only heavier responsibilities and greater opportunity for service.

Incidentally, I might mention the fact that he has never sought a job, either honorary or vocational. The jobs have sought him. This has been true from the time when, as a senior in high school, he was selected to tutor a grammar school boy, and includes the three jobs he had between high school and Prep school, his private secretaryships to Dean Ferry and President Garfield at Williams, and his appointments at Columbia, as well as since then in industry.

His love of music established immediately a bond of sympathy with several of his classmates in the organic research laboratory. Geiger had been leader of the viola section in the Pierian Orchestra at Harvard, Lothrop was almost as much a musician as he was a chemist, Heidelberger's talents in this direction were outstanding, and Beal, although not a performer on any musical instrument, likewise had a great liking for music and, by the way, his son, Denton, is an accomplished bassoonist.

Harry is an independent Republican, and a Congregationalist. His hobbies include hiking, swimming and photography. Whenever he sees a mountain, he regards it as a challenge to get to the top. He is a confirmed "shutter bug," with a "seeing eye" and a "candid camera," and member of the Greenwich Photography Society. When he was eleven years old, he sold a box of Larkin's soap and received a 4 x 5 Cyclone box plate camera as a premium. That started him on a long trek in this wonderful hobby. It early contained some grand thrills in developing and printing (on solio or sun paper), and has given him much pleasure in sharing the results with many others too. Now it has developed into Kodachrome, and he is back to the old method of "You push the button and we do the rest."

He has also discharged faithfully and patriotically his duties and responsibilities as an American citizen in whatever community he was located. In Leonia, for example, he served on the local School Board for seven years (1929-36), and was its vice president for five years (1931-36).

He has a keen sense of humor and delights in a good joke, even when it is on himself, but is not apt to make them at another's expense, least of all a practical joke. Quiet and serious by nature, he is not much given

to social functions or frivolities, not that he fails to enjoy them, but because he feels that he has more important things to do. It cannot be said that his instincts and inclinations, however, were not gregarious for, even in his student days, he always attended chemical meetings, was a good mixer, and knew more chemists outside of Columbia than did most of his associates. He has a great capacity for making friends and is devotedly loyal to all who are fortunate enough to have won his friendship.

He is not of the worrying type, but meets his problems, as they come, calmly, cheerfully and courageously, and is the same behind the scenes as you see him daily on life's stage. According to his family, he has that rare and exceedingly valuable gift of being able to park his troubles, with his clothes, beside his bed at night, and fall immediately into deep and restful sleep.

Another fine trait in his character is his love of children and young people. With the innumerable other things he has to do, he is the director of a Church School. In fact, he was made a superintendent of a Sunday School of two hundred and thirty-five pupils on his seventeenth birthday, and has superintended similar schools most of the time ever since. One of the sincerest compliments he ever received came not long ago when some small boy friends were told that they could have a Hallowe'en party. Asked whom they would like to have as invited guests, they replied promptly and unanimously, "Dr. Fisher." "But," said their mother, "he is a grown up man and has no little boys of his own." "Oh yes," came the response, "But we know how much he *likes* little boys." Recently a former "problem class" of youngsters followed him into the hall, to continue a discussion in which they had become interested. Later one of these lads told his dad apologetically that he really didn't mean to, and just didn't know how it happened, but he "*forgot* and stayed fifteen minutes over time."

As a young man he used to help his father around the house, doing carpentry work and painting the house. After he was married, he built a corner bookcase, a special bookcase stand for a newly purchased set of the twelve volumes of the *Century Cyclopedia and Dictionary,* and a music cabinet, which could be put together entirely from the inside. The latter two are still in use.

Recently he has had lots of fun with slop culture with plants in the house, without any soil—just sand, or with a mixture of sand and soil

in order that the plants will not die from lack of moisture when the family are away for two or three days. They have not tried the complete solution method, since Harry has not had time to attend to the apparatus.

On June 7, 1910, he married Nellie Edna Andrews, of Weehawken, N. J., whose father was one of our most distinguished organists. They have three children: Helen, Ruth (Mrs. Francis Burt Rosevear), and Robert Andrews. Dr. Fisher's marriage and his home life have been exceedingly happy. I think that I have never visited a happier home or one where there was in constant evidence more affection and devotion to one another. It yields a comfort, consolation, and rejuvenation, which enables him to carry a burden of duties and responsibilities which otherwise might crush him.

In the final analysis, the real test of a successful life is not how large an estate is amassed nor how many decorations or other distinctions are won, but how many useful children and grandchildren are left behind you, and how much you did during your lifetime to help protect, teach and train the children of others. It is the human problem which is paramount. The most important crop still remains men and women. We have been so absorbed in making more and better automobiles, airplanes, and a host of things which minister to our prosperity, pleasure or protection, that we have overlooked completely the far greater need for more and better humans. Things and knowledge are much less important than the nature of the individuals who are to use them, and it is far less difficult to protect ourselves against things than against thoughts. It is entirely praiseworthy to seek for "the more abundant life," but it does not appear to be understood, except by those well versed in history, that no people can achieve and retain greatness unless they worship sacrifice rather than ease, and crave service rather than support in idleness. As Roger W. Babson so clearly puts it: "Progress comes only through truth, security comes only through courage, and freedom comes only through sacrifice."

Our country was never in greater need than it is today for more citizens of the Harry Linn Fisher type.

Plan to attend the Annual Meeting on May sixteenth.

Scientific Record of Harry Linn Fisher

By Norman A. Shepard, F.A.I.C.

TO COVER the scientific and technological accomplishments of Harry Linn Fisher and his various scientific activities, in the short time allotted for this part of our evening's program is a difficult assignment, for his activities during the thirty-two years since he received his bachelor's degree have been so extensive. It will be possible only to touch on certain of these activities, conserving the time for those which are of the greatest importance.

It is interesting that Dr. Fisher's first publication touched on the field of biochemistry, when he worked with Dr. N. B. Foster of the Biochemistry Department of Columbia University, in determining the fate of creatine and creatinine in the metabolism of dogs with Eck fistula. The young experimentalist, on seeing his first paper in print in 1911, must have been somewhat piqued when the article came out under the names of N. B. Foster and *Henry* L. Fisher, this occurrence leading to the assumption that this was not our Harry. In fact, the reference had been tossed out as irrelevant in working up the bibliography of Dr. Fisher's work, until assured by Dr. Fisher that this was he!

The work which lead to the granting of the Doctor's Degree to Dr. Fisher in 1912 resulted in joint publications with Dr. Bogert. The first covered the preparation and properties of 5-aminoquinoline-6- carboxylic acid and certain related compounds. The reaction was an interesting one, involving the simultaneous reduction of the nitro group and oxidation of the methyl group of 5-nitro-6-methylquinoline in the presence of caustic potash, and the second covered derivatives of a new heterocyclic system, 5-naphtho-iso triazines, formed from the above aminoquinoline carboxylic acid by the action of formamide. These papers were first published in the *Original Communications* of the *Eighth International Congress of Applied Chemistry*, and later appeared in the *Journal of the American Chemical Society*. The work was of the usual high quality emanating from the laboratories of Dr. Bogert, and proved that our honored guest had been duly initiated in the mysteries of organic chemistry.

During the years that Dr. Fisher was a member of the chemistry staff of Columbia University, from 1912-1919, his interest in analytical work, in improved procedures, and in improved design of apparatus for such work is shown by the fact that he designed a special type of stop-cock

for dropping liquids arranged for equalizing the pressure above and below the outlet of the stop-cock. This was used in the Dumas nitrogen determination. He also designed a new form of absorption bottle for use with either calcium chloride or soda lime in the ultimate analysis of organic substances for carbon and hydrogen. His first patent was the one granted on this design. The Fisher absorption bottle was made by Eimer and Amend, and I understand is still being marketed. It was during this same period that Dr. Fisher published on the use of cerium dioxide as a catalyst in organic combustion work, pointing out the precautions that must be taken to handle the nitric acid formed when the compound contained nitrogen. A publication with H. L. Faust and G. H. Walden on the preparation of alumina for use as an absorbent for water in organic combustion followed some years later. G. H. Walden, a student under Dr. Fisher, is now assistant professor of chemistry at Columbia.

During the years that Dr. Fisher was instructor at Columbia he was in charge of the organic preps laboratory, and this experience culminated in the publication in 1920 of the first edition of the *Fisher Laboratory Manual of Organic Chemistry*. This book received wide acceptance and recognition, and since that time has gone through four editions,—the latest in 1938.

I am told that someone by the name of Cummings, a glass blower at the University of California, has said that in order to be a real chemist "you must either design a potash absorption bulb or write a book." Though Dr. Fisher did not actually design a potash bulb, he came very close to it in his calcium chloride-soda lime absorption apparatus, and early in his career he did write a book—and a good book; so on the basis of the above definition, Fisher early and doubly qualified as a chemist, for it was not a case of "either-or"; he did both: designed an absorption bulb *and* wrote a book!

Further work in the strictly synthetic field followed in 1921 with a publication on dimethyl tartronate, in which it was shown how to increase the yields of this ester almost three-fold as compared with the previously published work. This work was done with H. L. Simons who was one of Dr. Fisher's graduate students. It may not have been entirely Harry's influence, but it is interesting to note that Dr. Simons is now president and general manager of his own company.

Dr. Fisher also took a fling at "canned heat," producing a solid alcohol preparation through the use of sodium stearate. I am not aware

of what became of the patent that resulted, and do not know whether this "solid alcohol" became a source of bootleg liquor in later years or not!

When one mentions rubber, the name of Dr. Fisher is certain to come to mind, not only if one is considering the theoretical aspects of rubber technology, but also if he is looking at the technological or commercial side. Dr. Fisher's interest in this subject dates back to his early post-graduate days. He has told me that he had made synthetic rubber several years before he entered the rubber industry in 1919, synthesizing the diolefin and polymerizing with sodium, according to the methods used in Germany during World War No. 1. It is not surprising that when Dr. Fisher was approached by Dr. W. C. Geer, vice president of the B. F. Goodrich Company, in the Fall of 1918, with an offer of a research position in the expanding laboratories of that company, Dr. Fisher was immediately interested, and after comparatively short negotiation decided to leave the teaching profession. That this was a serious wrench need hardly be emphasized. Dr. Fisher's ability as a teacher has been attested by the unsolicited testimonials of his students. On several occasions I have been told by one or another of them of the inspirational nature of his teaching and of the clarity with which he presented the difficult subject of organic chemistry. Through the years, Harry has retained the teacher's attitude and approach, and I am sure he has been tempted many times to return to the teaching profession. I feel sure the thing that intrigued him and clinched his decision to go to Goodrich was the fact that Dr. Geer held out to him an opportunity for real scientific work, with a minimum of the pseudo-research which is inevitable in an industrial research laboratory, for as soon as Dr. Geer retired from the rubber industry and the direction of research, and economic conditions necessitated cessation of the type of real research that Harry loved for the more practical problems of industry, he accepted employment elsewhere.

On arrival in the rubber metropolis of Akron, Dr. Fisher dug into the fundamental chemistry of the rubber hydrocarbon, and soon an improved procedure for determining the hydrocarbon by the tetrabromide method was published.

Shortly thereafter, and in rapid succession, followed publications and patents in this field. A review of the chemistry of rubber, and substantiation of the C_5Hg ratio (1923), *Chemistry of the Rubber Hydrocarbon* (1924); a patent on rubber vulcanization with ketone-amines, (1923),

which products found practical application in the factory, especially where freedom from toxicity was a requirement of the rubber goods; and a contribution in 1926 on the action of phenol on rubber tetrabromide with his collaborators at Goodrich, Harold Gray and E. V. McColm, in which investigation they proved that the product formed was not a phenyl ether but a di(hydroxyphenyl) compound. Harking back to his thesis work where he had coupled diazotized sulfanilic acid with his amino quinolines to form dyestuffs, Fisher coupled the above rubber derivative with this diazo compound and others, and made a series of water soluble dyes, resulting in another patent, issued in 1929.

He studied the unsaturation of rubber as influenced by heat alone, showing that under his conditions of experimentation, (350° C.) only approximately one-third the unsaturation remained, which was proof of cyclicization. Ultraviolet light changed viscosity of rubber colloidal solutions, but did not alter the unsaturation.

Various reagents were tried on rubber, and in 1927 a patent was granted to Fisher, which turned out to be the grandfather patent of the most important discovery of his career—the cyclicization of rubber by means of phenol sulfonic acid. Patent after patent was issued to Fisher and his collaborators in this field: cyclicization by means of organic sulfonic acids, sulfonyl halides, sulfuric, hydrochloric, or hydrobromic acids, phenol and trichloro acetic acid, phenol with chlorinated rubber, with hydrochlorinated rubber, with pinene hydrochloride, with diphenylamine hydrochloride, with trichloroaniline hydrochloride, with *m*-nitraniline hydrochloride, with mercuric chloride, stannic chloride, with diphenylamine hydrobromide, with cadmium sulfate, and (in collaboration with H. A. Winkelmann) with dialkyl sulfates alone. The products resemble gutta percha, balata or shellac in properties, depending on the reagent used and the time-temperature relations in the reaction. They are the basis of the "Vulcalock" process, used for binding rubber to metals, and of especial importance in obtaining adhesion of rubber linings for drums, tanks and tank cars, and for "cutless bearings" for propeller shafts, etc. The Goodrich Company have a vulcanizer so large that tank trucks and even full sized tank railroad cars can be rolled in, and the tank lining cured. As Dr. Fsher has said, it immediately became evident that these cyclicized rubbers would be valuable adhesives; they stuck to his fingers and to everything with which they came in contact. They have found application in marine cable insulation as they have very low water adsorption, for manu-

facturing sound records, for impregnation of fabrics, for proofing and gas imperviousness, and as substitutes for balata and gutta percha.

Other patents, and he has nearly thirty U. S. patents, aside from the many corresponding foreign patents, to his credit, resulted from his chemical treatments of rubber: one of the products obtained from both raw and vulcanized rubber with nitric acid, (1927) suitable for impregnating, coating and insulating, and another later (1934) on producing tacky rubber by means of organic nitroso compounds.

The far-reaching applications of the Vulcalock process, naturally excited the envy of Dr. Fisher's new employer, the U. S. Rubber Company, with whom he went in 1926, and he found himself confronted with the problem of equaling or bettering the Vucalock process —a none too pleasant assignment. He rose to the occasion, however, and a new series of patents began to appear in collaboration with his new associates—a process of binding rubber to metal which involved the use of a specially formulated cement, produced by mixing a vulcanized rubber "solution" having at least fifteen per cent of combined sulfur, (a semi-hard rubber stage) with a solution of vulcanized rubber having a substantially lower combined sulfur (in the soft-rubber range). Again an important discovery had been made.

Dr. Fisher was always interested in those materials which vulcanize rubber, aside from sulfur which is the chief commercial and practical one. They interested him from the theoretical standpoint of what vulcanization really is. Such unique materials are organic nitro compounds such as dinitrobenzene, dinitrotoluene, other nitro compounds and polynitro compounds—also benzoyle peroxide. He added another unusual series of vulcanizing agents—halogenated quinones, hydroquinones, and quinone-imines, with or without oxidizing agents such as lead peroxide, manganese peroxide, mercuric oxide or lead chromate.

While Dr. Fisher's interest always lay in fundamental research, with little inclination for the compounding art, he was not unfamiliar with this practical side of the rubber industry and he has one article in this field, on the use of lime in the manufacture of rubber.

Since becoming associated with the U. S. Industrial Chemicals, Inc., and the Air Reduction Laboratories, Dr. Fisher's activities as director of organic chemical research have been broadened to cover many phases

of organic chemical synthesis, but he still keeps rubber well in mind, as evidenced by his latest publication, *Rubber and Its Use,* 1941—a concise and excellent coverage of the subject for those who are interested in rubber, but have not had close contact with it. It is not only of interest to those technically trained, but also to the layman.

This account of Dr. Fisher's scientific record would not be complete without mention of his efforts in behalf of chemistry. He knows no party lines, lecturing on his beloved subject of chemistry, and specifically rubber, before sections of the American Chemical Society, American Institute of Chemists, American Society for Testing Materials, before college groups and other technical organizations, and church groups and other non-technical groups. He seems never too busy to give of his time and effort in any movement for the better understanding of what chemistry is and what it is accomplishing. His life is a round of research activities, lectures, committee meetings and technical writing. He was honored in June of this present year by being selected to deliver the Edgar Marburg Lecture before the Annual Meeting of the American Society for Testing Materials, his subject being "Natural and Synthetic Rubbers."

If you wish to refresh your memory as to his delightful style, direct and concise manner of expressing himself, and sense of humor, read his tribute to his former professor—"Marston Taylor Bogert"—on the occasion of the latter's sixty fifth birthday!

In a recent article in *Science,* Dr. A. V. Hill, research professor and secretary of the Royal Society of London, gives as qualifications for directors of research and heads of laboratories the following specification:

> "People of exceptional quality, not only in ability, originality and experience, but also in their human relations and sympathy —such men in such positions are rare, but they exist. Their value is very great. It is essential that they should remain investigators at heart and as far as possible in action, and not become mere bureaucrats."

Under this rigid specification, Harry Linn Fisher qualifies.

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January Meeting

The 186th meeting of the National Council of The American Institute of Chemists was held on Tuesday, January 20, 1942, at The Chemists' Club, 52 East 41st Street, New York, N. Y., at 6:30 p.m.

Dr. Harry L. Fisher presided. The following officers and councilors were present: Messrs. E. R. Allen, S. R. Brinkley, H. L. Fisher, C. N. Frey, M. L. Hamlin, R. J. Moore, W. J. Murphy, H. S. Neiman, W. T. Read, G. E. Seil,, F. D. Snell, and W. D. Turner. Mr. M. R. Bhagwat, Dr. W. H. Gardner, and Miss V. F. Kimball were present.

Upon motion made and seconded, the minutes of the previous meeting were approved.

Upon motion made and seconded, the revised constitution adopted by the New York Chapter was approved.

The Secretary announced that he had prepared and sent a resolution offering the services of the Institute to the United States Government during the present War emergency.

The following new members were elected:

FELLOWS:

Atkin, Lawrence
(1942), *Research Chemist* Fleischmann Laboratories, Standard Brands, Inc., New York, N. Y.

Davis, Thomas W.
(1942), *Assistant Professor of Chemistry,* New York University, New York, N. Y.

Johns, Iral B., Jr.
(1942), *Associate Professor of Chemistry,* Iowa State College, Ames, Iowa.

Sartori, WilliamJ.
(1942), *Research Assistant*, U. S. Shellac Importers Association, 94 Livingston Street, Brooklyn, N. Y.

Walsh, Edward R.
(1942), *Chief Chemist*, Frankfort Distilleries, Inc., Louisville, Ky.

Webster, Granville E.
(1942), *Chemist*, Picatinny Arsenal, Dover, N. J.

JUNIOR:

O'Connell, John J., III
(J.1942), American Cyanamid Company, 30 Rockefeller Plaza, New York, N. Y.

Upon motion made and seconded, the following changes in rank were made:

Norman Haber, A.A.I.C. Raised to Fellow.

Reinhard W. Scharf, A.A.I.C. Raised to Fellow.

Maurice J. Kelley, J. A. I. C. Raised to Associate.

Clarence J. Arrowsmith, J.A.I.C. Raised to Fellow.

A. Edgar Kroll, S.A.I.C. Raised to Junior.

President Fisher read a letter from the Pennsylvania Chapter requesting information about Student Medal awards.

President Fisher read an invitation from the American Academy of Social and Political Science, which requested the INSTITUTE to send a delegate to its meeting. Dr. Haenisch was selected to be such a delegate.

The Treasurer reported that the cash position of the INSTITUTE was low, and recommended that the INSTITUTE borrow $1000.00 to improve the cash position without removing funds from a savings account. Upon motion made and seconded, the Treasurer was authorized to borrow this amount.

Dr. Seil reported that he had a letter from Dr. Rivise asking that the INSTITUTE protest the moving of the United States Patent Office to Richmond.

Upon motion made and seconded, the report of the Committee on Licensing and the report of the Committee on Ethics were postponed until the next meeting of the Council.

Upon motion made and seconded, Dr. Snell was requested to get in touch with the members who introduced the Licensing Bill to the Legislature last year and to have them reintroduce it this year.

There being no further business, adjournment was taken.

Applications for Membership

Final action will be taken by the National Council, at its next meeting, on the following applications:

For Fellows

Gwynn, Marion Hayes
Consultant, National Oil Products Company Harrison, N. J.

Grupelli, Logan D.
Chemical Market Development, National Oil Products Company, Harrison, N. J.

Singleton, Frederick Gray
Industrial Fellow, Mellon Institute for Industrial Research, Pittsburgh, Pennsylvania.

For Associate

Weingarten, Garry
Chemist, Picatinny Arsenal, Dover New Jersey.

CHAPTERS

New York

Chairman, Donald Price *Vice-chairman*, Elmore H. Northey
Secretary-treasurer, Milton Burton
New York University
New York, N. Y.
Council Representative, Marston L. Hamlin

Niagara

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Secretary, Margaret C. Swisher
Department of Chemistry
University of Buffalo
Buffalo, New York
Council Representative, Arthur W. Burwell
Carl H. Rasch, *Alternate*

Pennsylvania

Chairman, Edward L. Haenisch *Vice-chairman*, J. M. McIlvain
Secretary-treasurer, Clinton W. MacMullen
Rohm and Haas Company
Philadelphia, Penna.
Council Representative, Gilbert E. Seil
News Reporter to THE CHEMIST, Kenneth A. Shull

Washington

President, Ralph B. Deemer
Vice-president, L. F. Rader, Jr. *Treasurer*, L. R. Heiss
Secretary, Ernest J. Umberger
207 Albany Avenue, Takoma Park, Maryland
News Reporter to THE CHEMIST, T. H. Tremearne
Council Representative, Albin H. Warth

At the meeting of the Washington Chapter held on February 13th, at Wardman Park Hotel, Mr. Byron J. Culp of the Bureau of Agricultural Chemistry and Engineering, United States Department of Agriculture, gave a very interesting talk to the members and guests on the subject of bombs

and war gases.

In introducing the subject the speaker quoted from history the uses of fire catapaults, smokes, and poisons used in the B. C. era for waging war. These principles although elementary demonstrate the early progress of civilisation in methods of attack.

Today the Axis armies are waging a war in several ways. One method is to create as many casualties as possible, to tie up the population in a ratio of about four to one to care for the injured. Another annihilates the population of a given sector or moves them to unfertile unproductive areas where a slow starvation process follows.

It is common knowledge that present day warfare differs greatly from that of World War I. The advance of aviation has promoted a rapid change. Bombing of cities and their population is done to strike terror in, and cause confusion of the people.

The four common types of bombs, Thermit, Magnesium, Gas and High Explosives were described in detail sufficient to give the main types of damage, control, and procedure of the public following such bombings.

A scale model of part of the South agriculture building was used to demonstrate the probable angle of approach of a bomb, of the four usual types, to the walls or roof of the building.

A demonstration of a very small simulated magnesium bomb and the method of extinguishing the bomb while burning was shown by dropping large droplets of water on the "bomb". The water caused increased action and "spattering". The method of using a fine fog to smother the bomb was shown by using a common nasal spray. Thermit on a reduced scale was shown in action and the sand method of covering and extinguishing the fire was successful.

The subject of where to go in your dwelling in case of a bombing raid was discussed, and it is evident that a place of safety depends primarily on the locality and structure of the building. The new type of gas mask was shown and samples illustrating filters and fillings of the various purpose masks, and the usual type of gases were exhibited.

The purpose of Mr. Culp's talk was to acquaint the public with the phase of war that the civilian population may encounter, to educate them in the methods to employ to decrease the effectiveness of bombings and to allay hysteria caused by ignorance.

Dr. Harry L. Fisher, President A.I.C., will speak on "The Human Side of Inventions and Patents" at a meeting of the Washington Chapter to be held March 16, 1942, at the Wardman Park Hotel, Washington, D. C.

A meeting scheduled for Friday, May 29, 1942, at the Wardman Park Hotel, will have as guest speaker Dr. Donald H. Andrews, F.A.I.C., who will talk on "Opportunities for Service of Young Chemists in the Post-war Period." Officers for the coming year will be elected at this meeting.

Truesdail Laboratories, Inc., 520 West End Avenue, Los Angeles, California, held an "Open House" on the occasion of the opening of its enlarged and improved chemical and bacteriological laboratories on January 29th.

BOOKS

DIFFUSION IN AND THROUGH SOLIDS. By Richard M. Barrer. *Cambridge: at the University Press; New York: The Macmillan Company.* 1941. 5½" x 8½". 464 pp. $6.50.

The author is head of the Chemistry Department, The Technical College, Bradford, and formerly research fellow, Clare College, Cambridge, England; and the book was printed in Great Britain. Its subject is a study of the permeability of materials to solutes, and of the diffusion constants of solutes within them. The author has successfully attempted to keep a balance between experimental methods and their mathematical and physical interpretations; to provide lists of permeability and diffusion constants for ready reference; and to outline current theories of processes of permeation, solution, and diffusion.

Chapter headings are as follows: I. Some Solutions of the Diffusion Equations; II. Stationary and Non-stationary States of Molecular Flow in Capillary Systems; III. Gas Flow in and Through Crystals and Glasses; IV. Gas Flow Through Metals; V. Diffusion of Gases and Non-Metals in Metals; VI. Diffusion of Ions in Ionic Crystals, and the Interdiffusion of Metals; VII. Structure-Sensitive Diffusion; VIII. Migration in the Surface Layer of Solids; IX. Permeation, Solution and Diffusion of Gases in Organic Solids; and X. Permeation of Vapours Through, and Diffusion in, Organic Solids. Each Chapter has a generous bibliography of references including those from American sources.

The text is illustrated with one-hundred and fifty-eight figures, but it is to be regretted that war-time paper restrictions in England required such excellent material to be printed on such a cheap grade of book paper.

Chemical and mechanical engineers, colloid chemists, physicists, metallurgists, and research workers in many branches of science and industry will find that this scholarly work will be of interest to them.

AIR RAID PRECAUTIONS. (Reprint of British Publication). *Chemical Publishing Company.* 1941. 5½" x 8½". 200 pp. $3.00.

This book is a compilation of various official British pamphlets, instructions, and regulations, on air raid precautions. It contains information on the British practice for rescue parties, decontamination, and structural defense, the organization of the Air Raid Warden service, training and exercises, the detection and identification of gas, protection of windows, inspection and repair of gas masks and protective clothing, and the care and custody of equipment used in air raid defense. This book will be of value to those charged with drawing up air raid regulations for American cities, for this outline of the work done in England will help them to avoid that period of experimental confusion which is apt to precede the final installation of a new public project. The average American civilian engaged in civil defense work is apt to find that this book is too British in its language and rules to be of much value to him.

Colonel Richard Stockton, U. S. Army.

FORENSIC CHEMISTRY. By Henry T. F. Rhodes. *Chemical Publishing Company.* 1940. 5½" x 8". 214 pp. $5.00.

Those interested in chemistry as it is used in crime detection will welcome this addition to the comparatively few books which have been published on the subject. The author is correspondent of the International Academy of Criminology, honorary research assistant in the "Conan Doyle" Laboratory of Chemical Research, Department of Technical Police, Prefecture of the Rhône, France, and he has had practical experience in most of the operations described in this book, some of which have not been published before in a textbook.

Part One of this volume is entitled the "Application of Chemical Methods to the Identification of the Person". Part Two is entitled "Application of Chemical Methods to the Proof of Corpus Delicti". Chapters are devoted to "Stains", "Firearms and Explosives", "The Chemical Examination of Questioned Documents", "The Chemical Examination of Counterfeit Money," and "The Examination of Toxic Agents."

Many materials are listed, together with the substances which should be sought for in them, and possible interpretations of the findings are given. General procedures for determinations are indicated but the specific details of the operations are left to the chemical education of the reader. A list of references contributes to the value of this interesting work.

Foster D. Snell, Inc. has issued a new eight page booklet entitled "Foster D. Snell, Inc., Who, What, Why", which outlines in brief form functions of the consulting chemist and chemical engineer. Copies may be obtained without charge from this company at 305 Washington Street, Brooklyn, N. Y.

A joint meeting of the American Section of the Society of Chemical Industry and the American Institute of Chemical Engineers, was held on February twentieth, at The Chemists' Club, 52 East 41st Street, New York, N. Y.

The subject of the discussion was "What is Research". Lincoln T. Work, F.A.I.C., director of research of the Metal and Thermit Corporation, spoke on "What is Research"; Frank G. Breyer, F.A.I.C., of Singmaster and Breyer, discussed "Research—From the Consultant's Viewpoint"; Dr. George O. Curme, Jr., vice president of Carbide and Carbon Chemical Corporation, contributed "Research—From the Industrial Viewpoint"; and Dr. L. W. Bass, assistant director of Research at Mellon Institute, discussed "Research — From an Institutional Viewpoint".

The New York Branch of the American Pharmaceutical Association met on Monday evening, February 9, 1942, at 8:30 o'clock, at the College of Pharmacy of Columbia University, New York, N. Y. The meeting was devoted to a discussion of "Sulfonamides", under the direction of Dr. Herman Goodman. Subjects and speakers were: "The Pharmacology of the Sulfonamides", Dr. Curt P. Wimmer; "Sulfonamides in the Treatment of Pneumonia", Dr. Salo Nordeman Weber; "Sulfonamides in the Treatment of Gonorrhea and the Venereal Diseases", Dr. Adolph Jacoby; and "Sulfonamides in the Treatment of Diseases of the Skin", Dr. Maurice J. Costello.

EMPLOYMENT

Chemists Available

ORGANIC RESEARCH CHEMIST. A.A.I. C., M.A. in Chemistry. Columbia 1936. Experienced in organic research pertaining to lignin and cellulose materials. Also testing or organic and inorganic materials. Development of methods of analyses. Please reply to Box 71. THE CHEMIST.

CHEMIST AND MANUFACTURING PHARMACIST. F.A.I.C., Ph.C. Experienced in chemical and pharmaceutical products, foods, cosmetics, and household specialties. Able to handle analytical, research, production supervision, and formulations, as well as bulk compounding. Known for numerous technical publications in the United States and abroad. Draft-exempt. Please reply to Box 123.

BLACKOUT CHEMIST, F.A.I.C., experienced in the development, manufacture, and application of phosphorescent pigments. Background in physics and physical chemistry and general industrial experience. Cornell Ph.D. Please reply to box 11, THE CHEMIST.

CHEMIST, F.A.I.C. Twenty-three years experience in paint and varnish industry and allied fields. Factory control and supervision of production. Research and direction of research on paints, varnishes, driers, vegetable oils, dry colors, cleaning compounds, marine coating compositions, fatty acids, etc. Factory design and equipment. Knowledge of Portuguese, German and French. Please reply to Box 121.

Former vice-president and general manager of petroleum marketing company, F.A.I.C. with mechanical engineering and extensive organic chemical research training desires new connection. Extensive knowledge of petroleum refining, transportation, sales and advertising; Owns twelve patents and six applications. Experienced in construction; good general knowledge of chemical industry; able to handle work requiring responsibility and business experience. Age 49, married, exempt from military service; location immaterial, available immediately. Please reply to Box 15, THE CHEMIST.

Metallurgists Needed in War Agencies

The Civil Service Commission is seeking metallurgists for work in Government navy yards, arsenals, and other war agencies. The positions pay from $2,000 to $5,600 a year and will last in most cases for the duration of the war. Application forms, obtainable in any first- or second-class post office, sent to the Commission in Washington, D. C. are all that is necessary to be considered for these positions.

Experience in metal working industries with fabrication processes such as welding, die-casting, heat treating, x-ray testing, and metallographic work is particularly desired, but not necessary for all positions. College training in metallurgy or college training in other subjects and one year's experience in metallurgy will qualify for positions paying $2,000 a year. For the higher salaried positions, some industrial experience, or graduate study, in addition to a bachelor's degree, is required. The positions are in Washington, D. C. and in Government war establishments throughout the country.

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Appendix

- A. Symbols Commonly Used in Engineering Reports
- B. Conventions
- C. References

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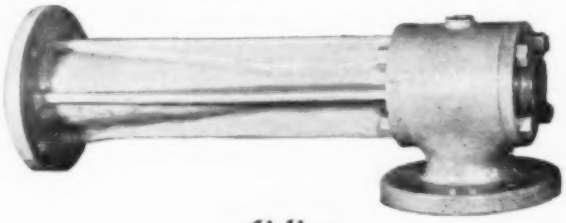

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